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July 25, 2008

ATTN: Certificate of Correction Branch
Commissioner for Patents
PO Box 1450
Alexandria, VA 22313-1450

Re: Request for Certificate of Correction
United States Patent No. 7,353,157
Issue Date: April 1, 2008
Title: CIRCUIT SIMULATION
Inventor(s): Wasynczuk, Jatskevich
Our Ref.: 031122-000012

Dear Sir:

A Certificate of Correction of the above-identified patent is respectfully requested to correct certain errors which appear in the patent as issued.

The exact location where the errors occur and the necessary corrections are indicated on the attached form, which form as prepared is suitable for printing.

The errors as set out on the attached form were made on the part of the Patent Office and therefore no fee is required. If it is determined that additional fees are required in order to complete the Certificate of Correction, please charge such fees to Deposit Account No. 23-3030.

Please send the certificate to Troy J. Cole at Woodard, Emhardt, Moriarty, McNett & Henry LLP, 111 Monument Circle, Suite 3700, Indianapolis, Indiana 46204-5137.

Very truly yours,

T.J. Cole
E-Mail: tjcole@uspatent.com

Enclosure
31:jkrp:P35US:#542532

WEMMH PTO/SB/44 (09/07)
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UNITED STATES PATENT AND TRADEMARK OFFICE
CERTIFICATE OF CORRECTION

PATENT NO. : 7,353,157
APPLICATION NO. : 10/043,981
ISSUE DATE : April 1, 2008
INVENTOR(S) : Wasynczuk et al.

It is certified that error appears or errors appear in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Column 4, line 16, the formula should appear as follows: B_{tree}^{active}

Column 8, line 35, the formula should appear as follows: $G_{trees}^{g} = (\mathrm{N}, \mathrm{By})$

Column 12, line 42, figure (2.28) the formula should appear as follows:

$$\hat{\mathbf{A}}_a \mathbf{i}_{br} \mathbf{T}_p = \hat{\mathbf{A}}_a \hat{\mathbf{i}}_{br} = \mathbf{0}$$

Column 12, line 52, figure (2.30), the formula should appear as follows:

$$\hat{\mathbf{i}}_{br} = \left[\mathbf{i}_y, \mathbf{i}_x\right]$$

Column 17, line 20, figure (2.112), the formula should appear as follows:

$$\mathbf{K}_C = \mathbf{C}_y^{-1}$$

Column 32, line 6, figure (3.102), the formula should appear as follows:

$$\mathrm{MinSTA}(\tilde{G}, w_L) \Rightarrow \tilde{G}_{\mathrm{trees}} = (\tilde{N}, B_y^{LA})$$

Column 42, line 14-23, figure (4.18), the formula should appear as follows:

$$\begin{aligned}
\mathbf{i}_{br}^{C} &= \left(\left(\mathbf{G}_{br} + \frac{d\mathbf{C}_{br}}{dt}\right)(\mathbf{A}_a^C)^T - \mathbf{C}_{br}(\mathbf{A}_a^C)^T \mathbf{C}_y^{-1}\left(\mathbf{G}_y + \frac{d\mathbf{C}_y}{dt} - \mathbf{D}_a^{CA}\mathbf{D}_V^A\right)\right)\mathbf{v}_y \\
&+ (\mathbf{C}_{br}(\mathbf{A}_a^C)^T \mathbf{C}_y^{-1}(\mathbf{D}^{LC} + \mathbf{D}_a^{CA}\mathbf{D}_I^A))\mathbf{i}_x \\
&+ (\mathbf{C}_{br}(\mathbf{A}_a^C)^T \mathbf{C}_y^{-1}(\mathbf{A}_a^C + \mathbf{D}_a^{CA}\mathbf{D}_j^A) - \mathbf{I}^C)\mathbf{j}_{br}^{CA} \\
&+ (\mathbf{C}_{br}(\mathbf{A}_a^C)^T \mathbf{C}_y^{-1}\mathbf{D}_a^{CA}\mathbf{D}_e^A)\mathbf{e}_{br}^A = \mathbf{C}_C^{CA}\mathbf{v}_y + \mathbf{C}_C^{LA}\mathbf{i}_x + \mathbf{D}_C^{CA}\mathbf{j}_{br}^{CA} + \mathbf{D}_C^A\mathbf{e}_{br}^A
\end{aligned}$$

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Column 46, line 2, should read --where $M_L(t)$ and $M_C(t)$ are so-called mass matrices that can be dependent on time and state--

Column 47, lines 52-56 should read--

In other words, the vectors (or more precisely trajectories) $\mathbf{i}_{br}^{L}$ and $\mathbf{v}_{br}^{C}$ must be bounded and continuous across topological boundaries. Recalling how $\mathbf{i}_{br}^{L}$ and $\mathbf{v}_{br}^{C}$ are related to the vectors of independent inductor currents and capacitor voltages, (5.11)-(5.12) can also be rewritten as

--

Column 48, lines 5-6, figures (5.17) and (5.18) should read:

$$\left(\mathbf{B}_{i+1}^{L}\right)^{+} = \mathbf{T}_{L}^{i+1}\begin{bmatrix}\mathbf{0} & \mathbf{I}_{i+1}^{L} & \mathbf{0}\end{bmatrix}^{T} = \left(\mathbf{B}_{i+1}^{base}\right)^{T}$$

$$\left(\mathbf{A}_{i+1}^{L}\right)^{+} = \mathbf{T}_{C}^{i+1}\begin{bmatrix}\mathbf{I}_{i+1}^{C} & \mathbf{0} & \mathbf{0}\end{bmatrix}^{T} = \left(\mathbf{A}_{i+1}^{base}\right)^{T}$$

Column 48, line 8, should read--It can be noted that $\mathbf{B}_{i+1}^{base}$ and $\mathbf{A}_{i+1}^{base}$ are full-rank--

Column 48, lines 15-17, figures (519) and (5.20) should read:

$$\mathbf{i}_{x}^{i+1} = \mathbf{B}_{i+1}^{base}\mathbf{i}_{i}^{L}$$

$$\mathbf{v}_{y}^{i+1} = \mathbf{A}_{i+1}^{base}\mathbf{v}_{i}^{C}$$

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Column 48, lines 31-34, figures (5.24) and (5.25) should read:

$$\mathbf{i}_i^L = \mathbf{i}_{i+1}^L = \mathbf{i}_{br}^L, \text{ and } \left\|\mathbf{i}_{br}^L\right\|_\infty < \infty$$

$$\mathbf{v}_i^C = \mathbf{v}_{i+1}^C = \mathbf{v}_{br}^C, \text{ and } \left\|\mathbf{v}_{br}^C\right\|_\infty < \infty$$

Column 54, line 33-34, figure (6.5) should read:

$$\mathbf{i}_{br}^C(k) = \sum_{l \in M_1^C} G_{br}^C(k, l)\mathbf{i}_{br}^L(l) + \sum_{m \in M_2^C} \frac{dC_{br}}{dt}(k, m)\mathbf{v}_{br}^C(m)$$
$$+ \sum_{n \in M_1^C} C_{br}(k, n)\frac{d}{dt}\mathbf{v}_{br}^C(n) - \mathbf{j}_{br}^C(k)$$

Column 57, line 21, figure (6.19) should read:

$$\mathbf{g}^C(\mathbf{u}, t) = \mathbf{A}_a^{C,C}\mathbf{j}_{br}^C - \mathbf{D}_a^{CA}\mathbf{i}_{br}^A - \mathbf{D}^{LC}\mathbf{i}_x^L$$

Column 61, line 33, figure (6.27) should read as follows:

$$\eta_{6.14}(n) = \Theta[n^2(\overline{m}^2 + 1)]$$

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Column 66, beginning with line 46, the text of claim 1 should be replaced in its entirety with the following:

-- A computer-implemented method, comprising:

creating one or more data structures that together store characteristics of a plurality of active branches B^{active} that make up a graph of nodes and branches that form a circuit, wherein B^{active} consists of

a set B^L of zero or more inductive branches, each having a non-zero inductive component but neither a capacitive component nor a variable switch state;

a set B^C of zero or more capacitive branches, each having a non-zero capacitive component but neither an inductive component nor a variable switch state; and

a set B^A of additional branches, each having neither an inductive component, nor a capacitive component;

partitioning B^{active} into a first branch set B_{tree}^{active} and a second branch set B_{link}^{active}, where the branches in B_{tree}^{active} form a spanning tree over B^{active}, giving priority in said partitioning to branches not in B^L over branches in B^L;

sub-partitioning B_{link}^{active} into a third branch set B_{link}^{L} and a fourth branch set B_{link}^{CA}, where $B_{link}^{L} = B_{link}^{active} \cap B^L$;

identifying a fifth branch set B^{CA} as the union of

B_{link}^{CA},

$B^C \cap B_{tree}^{active}$, and

those branches in B_{tree}^{active} that form a closed graph when combined with B_{link}^{CA};

partitioning B^{CA} into a sixth branch set $\widetilde{B}_{tree}^{CA}$ and a seventh branch set $\widetilde{B}_{link}^{CA}$, where the branches in $\widetilde{B}_{tree}^{CA}$ form a spanning tree over B^{CA}, giving priority in said partitioning to

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partitioning B^{CA} into a sixth branch set $\widetilde{B}^{CA}_{tree}$ and a seventh branch set $\widetilde{B}^{CA}_{link}$, where the branches in $\widetilde{B}^{CA}_{tree}$ form a spanning tree over B^{CA}, giving priority in said partitioning to branches in B^C over branches not in B^C;

identifying an eighth branch set $B^C_{tree} = \widetilde{B}^{CA}_{tree} \cap B^C$;

selecting a set of state variables comprising:

for each branch of B^L_{link}, either the inductor current or inductor flux, and

for each branch of B^C_{tree}, either the capacitor voltage or capacitor charge; and

simulating a plurality of states of the circuit using the set of state variables.

Column 67, line 34, the word "-true-" should be replaced with the word --tree--

Column 68, line 4, "-t_t-" should be replaced with --t_i--

Column 68, line 11, "-t_t-" should be replaced with --t_i--

Column 68, line 14, the word "-forte-" should be replaced with -- for the--

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